

EFFICACY AND SAFETY OF CAR-T CELL THERAPY IN PENILE AND URETHRAL CARCINOMAS: A META-ANALYSIS OF PRELIMINARY CLINICAL TRIALS AND CASE STUDIES

Inbsaat Iqbal, Muhammad Nabeel Saddique, Maryam Abid, Hashim Talib Hashim, Ahmad Q.M. Alhatemi, Sheena Shamoon; Mayo Hospital, Lahore, PK

Background

- Penile and urethral carcinomas are rare and aggressive cancers with limited treatment options, often leading to poor prognoses.
- Chimeric Antigen Receptor T-cell (CAR-T) therapy has shown promise in various malignancies, but its efficacy and safety in penile and urethral carcinomas remain under-explored.
- This meta-analysis aims to evaluate the preliminary clinical trials and case studies on CAR-T cell therapy in treating these rare carcinomas.

Methods

- Outcomes were pooled as untransformed proportions using a random-effects model.
- Meta-analyses were conducted using R Studio 5.3.
- A total of 15 studies, including 10 clinical trials and 5 case reports, comprising 230 patients were included in the meta-analysis.

Databases searched



Screening and Data Extraction



Statistical Analysis

- Software:** Statistical analyses were conducted using R Studio 5.3.
- Effect Measures:**
- Proportions* with 95% CIs for ORR, CRS, CRR, neurotoxicity and treatment related mortality.
- Subgroup analyses were performed to identify factors influencing treatment outcomes.
- An I^2 value of $>50\%$ was considered significant heterogeneity.

Results

Outcome	Effect Measure	95% CI
Overall Response Rate (ORR)	42%	30% – 55%
Complete Response Rate (CRR)	15%	8% – 25%
Cytokine Release Syndrome (CRS)	35%	22% – 49%
Neurotoxicity	20%	10% – 33%
Treatment-Related Mortality (TRM)	0%	0% – 3%

Conclusion

- CAR-T cell therapy demonstrates encouraging efficacy in penile and urethral carcinomas, achieving an overall response rate of 42% and a complete response rate of 15%.
- Adverse events such as cytokine release syndrome (35%) and neurotoxicity (20%) were generally manageable, with no treatment-related mortality reported.
- Clinical heterogeneity, including pre-existing comorbidities and prior treatments, influenced therapeutic outcomes.
- These findings highlight CAR-T therapy’s potential as a novel treatment option for rare genitourinary malignancies.
- However, larger, multicenter trials are needed to validate these preliminary results and optimize treatment strategies.

References

